

Remarks

Ethylene oxide is a chemical of very great commercial importance which is produced by the catalytic oxidation of ethylene with molecular oxygen. There have been very great expenditures of time and money by some of the largest and most successful companies directed to improving the catalyst which is employed in ethylene oxide production.

The catalyst which is used comprises silver together with various promoters supported on a solid support such as alpha alumina. The efforts of prior workers have been directed both to improving the solid support as well to providing improved combinations of silver with various promoters.

In essence, the invention herein claimed relates to treatment of the solid catalyst carrier and to the improved carrier which results and to the improved catalyst which employs the so-treated carrier.

In essence, the process of the invention provides for a novel and unique aqua-thermal treatment of the carrier wherein the carrier is washed, then calcined at a temperature above 200° C and then again washed. Each of the washings can comprise a wash cycle of from one to five individual washes. It is essential that the carrier be subjected to calcination at temperatures above 200° C between two successive wash cycles in order that the advantages of the present invention be achieved.

It is the respectful contention of applicant that the aqua-thermal treatment is not taught in the prior art.

Silver ethylene oxide catalysts comprising the aqua-thermal treated carrier exhibit substantially improved characteristics when used for the production of ethylene oxide as demonstrated by the data contained in the instant application.

As pointed out at page 15, lines 7-9 catalysts prepared in accordance with the present invention demonstrate greatly reduced selectivity decline as compared to catalysts which are not so-prepared, thus clearly establishing the unexpected improvements achieved through the invention.

In the various rejections set out in the Official Action dated March 26, 2004, the primary reference relied on is Takada et al USP 6,103,916 (herein Takada). Applicant respectfully disagrees with the Examiner's position that Takada is in any sense anticipatory of the instant invention.

It is of the essence of the present invention that the carrier is washed, then calcined at above 200° C, preferably 300-1000° C (claim 2), and then again washed. It is respectfully contended that Takada does not suggest such a treatment procedure, and in fact it is not seen that the Examiner has made reference to any such anticipatory teaching of Takada. In fact, the Examiner acknowledges that "Takada does not disclose multiple washing and calcining step as being claimed" (page 5 of the March 26, 2004 action).

Further, the Examiner acknowledges that "Takada does not disclose calcining the carrier at temperatures above 200° C" (page 5 of the March 26, 2004 action).

Thus the Examiner has acknowledged that the art does not teach the critical claimed features of the instant invention process and thus fails completely as a primary reference.

The Examiner avers that the discoveries of the instant invention would be *prima facie* obvious to one skilled in the art but provides no real justification for such a position.

The instant invention should not be dismissed as obvious in retrospect after having the benefit of the instant teaching. The test is whether the art clearly and unequivocally of its own would point the skilled person to the claimed invention. Applicant is respectfully of the firm opinion that the art does not provide such a teaching. There is no teaching in the art showing or suggesting the wash-calcine-wash sequence of the instant invention much less the benefit achieved therefrom.

Claims 1,9-10 and 14-15 were rejected under 35 USC 102(b) on Takada. Reconsideration is respectfully requested since as above described Takada provides no teaching whatsoever of the claimed sequence or the benefits thereof.

Claims 2-8 and 11 were rejected under 35 USC 103(a) as unpatentable over Takada in further view of Jin et al. Reconsideration is requested. Takada is admitted to lack a teaching of the critical elements of the invention. The Jin et al. description of support calcination is not in the context of the treatment sequence of the invention. There is no teaching of Jin et al which could reasonably provide

motivation to the skilled worker to arrive with the Takada teaching at the claimed procedure much less to suggest advantages thereof.

Reconsideration of the rejection of claims 2-11 and 8 on 35 USC 103(a) is requested.

Claims 12-13 were rejected under 35 USC 103 (a) as unpatentable over Takada in further view of Mross et al. Reconsideration is requested.

The defects of the Takada reference are discussed above. In essence this primary reference fails completely to suggest the instant claimed sequence which goes to the essence of the instant invention.

Mross et al. does not remedy the fatal defects of the primary reference. There is no suggestion in these references, singly or combined which would guide the skilled worker to the essential features of instant claimed invention or the benefits achieved therefrom.

Reconsideration of the rejection under 35 USC 103 (a) on Takada in view of Mross is requested.

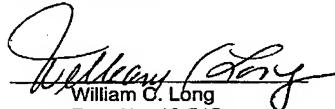
Applicant has made a significant and substantial advance in the commercially important and highly active area of ethylene oxide catalysis. The features critical to the instant improved process are not shown or suggested by the cited art, nor are the advantages achieved therefrom taught by or obvious from the art.

The Examiner is respectfully requested to reconsider the various claim rejections and to allow the instant case.

The number of total claims and the number of independent claims has not been changed. Accordingly, it is believed that no additional fees are owed at this time. Should this be incorrect, authority is given to charge any deficient amount to Deposit Account No. 12-2138.

Allowance is requested.

Respectfully submitted,



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